Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_

**Study Guide for Evolution Test** Friday April 24th

**Vocabulary**

Adaption

Fitness

Offspring

Mutation

Variation

**REMEMBER**

* Populations (species) evolve NOT individuals
* N.S. leads to (is a mechanism for) evolution. (It is not evolution.)
* Mutations create variation is a population.

***Please note – we’ve watched many videos this unit. You may find it helpful to re-watch the videos as you prepare for the test.***

**Antibacterial/Antibiotic Resistance**

What are antibiotics?

“Why does evolution matter now?” (PBS video: <https://youtu.be/W-WumllRPLI>) focuses on multi-drug resistance in Russian prisons. **What disease did the patients have? Why is it problematic that they have the drug resistance from of the disease?**

**Describe, in detail, how does antibacterial/antibiotic resistance come to be?**

Another resource: “What causes antibacterial resistance?” (TedEdVideo: http://ed.ted.com/lessons/how-antibiotics-become-resistant-over-time-kevin-wu)

**Charles Darwin**

**Who was he? Where did he travel? What was the name of the ship he travelled on?**

**What was the name of his book?**

**On what group of islands did he make his famous observations? What kinds of organisms did he study?**

In England, Darwin also observed how humans bred pigeons and dogs or cultivated plants to have traits that we deemed good**. He described these processes as “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.”**

**What observations and later conclusions did Darwin make about the finches? What did the Grants observe in the finch populations in the 1970s?**

**Natural Selection**

Natural selection can only occur if there is variation in a population. *Mutations create variation in all species.* **What are ways in which variation can be maintained in a species?**

“How does evolution really work?” (PBS video: <https://youtu.be/KDPLig4lMFo>)

**What four things need to be present/occurring in a population for natural selection to occur?**

1. **3.**
2. **4.**

**Explain how the “two people walking and one outrunning a bear” example relates to natural selection?**

**Describe the hummingbird bills and flower example. What would happen to the hummingbird population over time if there were mostly longer flowers?**

Natural selection can lead to adaptations. **What is an adaptation? Please provide at least one specific example.**

**How are the Rock Pocket Mice** (HHMI video: <https://youtu.be/sjeSEngKGrg>) **in Southwest USA an example of natural selection?** Be sure to mention lava and mutations.

**What is the connection between Sickle Cell Anemia and Malaria?** (HHMI video: <https://youtu.be/Zsbhvl2nVNE>) **Why are people of African descent more likely to have SCA than those whose recent ancestors are from other parts of the world? (Mention heterozygote advantage)**

**In the *Survival of the Sickest* cartoon, how did natural selection favor calling? How did nat. sel. not favor calling?**

**How did natural selection favor not-calling/sneakiness? How nat. sel. not favor not-calling/sneakiness?**

**Why is “survival of the fit enough” a better way to explain natural selection than “survival of the fittest”?**

**Evidence for Evolution**

**Fossils: What are they? How do they support the theory of evolution?**

**Ex. Whales descended from wolf-like creature.**

**Anatomy**

**Homologous structures: What are they?**

**Examples?**

**Vestigial structures:** What are they?

Examples?

**Analogous structures:** What are they?

Examples?

**Molecular:** What is it? How doesit support the theory of evolution?

**Geographic distribution:** What is it? How doesit support the theory of evolution?

**Embryos/Embryological:** What is it? How doesit support the theory of evolution?

**Genetic Drift**

What is **bottleneck effect**?

What is **founder effect**?

**Practice questions**

1. How is natural selection in the evolution of long necks in giraffes best explained?



1. Shorter-necked giraffes were killed by long-necked giraffes
2. Giraffe necks grew longer because of the bone structure of the environment
3. Giraffes with long neck survived because they had the advantageous trait
4. Long-neck and short-neck giraffes were two separate species that could not mate
5. *True or False*. If false, please make the statement true.

The smallest organisms are always eliminated by the larger organisms within the ecosystem

1. A certain area has four types of mosquito species whose characteristics are shown in the table below.

**Characteristics of Mosquito Species**

|  |  |  |
| --- | --- | --- |
| **Mosquito Species** | **Population Size** | **Genetic Diversity** |
| A | Large | Low |
| B | Small | High |
| C | Large | High |
| D | Small | Low |

An insecticide was sprayed in area to get rid of the mosquitoes. Based on the information in the table, which species of mosquito will most likely survive for the longest period of time?

1. Species A B. Species B C. Species C D. Species D
2. Describe how the bird beak lab simulated (imitated) the process of natural selection. Be sure to use words such as variation, competition, survival, reproduction, etc.

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1. An insecticide is a chemical that kills insects. Most insects are killed the first time they are exposed to an insecticide. However, some insects carry a gene that enables them to survive their first exposure to an insecticide. If a farmer keeps spraying the insecticide how will the insect population change over time? Explain WHY the population will change. (Think about SURVIVAL and REPRODUCTION)

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